

Safety Training

Visual Performing Arts Safety

This Cal State San Marcos Safety Visual and Performing Arts department (VPA) Training Guide includes information regarding the potential hazards associated in the VPA and trains you to work safely while performing specific tasks. It is important that you adhere to these safety guidelines.

VPA training is provided to students, faculty and staff following; General Industry Safety Order Title 8 3203 (a) 3 Injury and Illness Prevention Program.

This handout has been prepared by Risk Management & Safety (RM&S). RM&S is available to answer any questions you might have regarding safety concerns in the VPA department. Please contact Bill Thomas, Safety Specialist at x4502.

Incident/Accident Reporting

Cal State San Marcos' Injury and Illness Prevention Plan (IIPP) requires that all accidents and injuries be reported as quickly as possible. All "Incidents and Accidents" should be reported to your instructor or supervisor. Your instructor or supervisor will contact University Police, 911 or x4567, to report the incident and obtain any necessary assistance. When incidents occur on campus, RM&S may investigate to determine if a corrective action is necessary. Consultation will follow investigating accidents of a serious nature.

You will not be permitted to work in Cal State San Marcos VPA until you:

- Have read this VPA Safety Training Guide
- Have been instructed in hazards by your instructor and have had any questions answered
- Have signed off on the VPA Safety Training Guide

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Hazardous Communication (Material Safety Data Sheets)

It is imperative that you understand the hazards inherent in the art materials such as toxicity, flammability, and reactivity, and the appropriate precautions to protect yourself against illness or injury. Materials that are highly toxic, flammable, or reactive can be handled safely if the proper precautions are followed. However, even materials of low toxicity that are normally considered to be “safe” can lead to accidents and toxic exposures if you ignore appropriate procedures and precautions.

In order to work in the VPA, you must be familiar with Material Safety Data Sheets (MSDS). An MSDS is a chemical or product specific health and safety reference document. It provides detailed information about the hazards associated with a chemical or product and precautions for handling it. The chemical or product manufacturer prepares the MSDS and it is available from the manufacturer, distributor, or importer listed on the product’s label. MSDSs are kept on file in RM&S, and in the VPA shops, studios, or work areas. Consult an MSDS whenever you begin working with a new chemical or product and review MSDSs periodically to see if the information has changed.

Although the format varies widely, the information found on an MSDS is consistent and includes:

A manufacturer’s name, address, and phone number. A list of the product’s hazardous ingredients including permissible exposure limits. A description of physical and chemical properties, as well as flammability and reactivity data. Health hazard information, including short- and long-term exposure effects, symptoms of overexposure, and a description of appropriate first aid and medical treatment to use in case of excessive exposure. Precautions for the safe handling, storage, and use of the product. A description of how to safely handle the material under normal and emergency situations. Finally, control measures including personal protective equipment, ventilation, and work/hygiene practices.

Under the OSHA Hazard Communication Standard, hazardous art materials, like other chemical products, must be labeled with: (1) the common name of the chemical or product; (2) the name, address, and emergency phone number of the company that manufactured the product; and (3) an appropriate hazard warning which may include words such as DANGER, WARNING, or CAUTION.

Determining whether an art material may cause harm depends not only on the toxicity of the material, but also the dose you receive. In order for an art material to affect your health, it must first enter your body and then reach an area of the body (termed the target organ or system) in a large enough concentration or dose to cause harm. Just as you need to take a sufficient dose of a medicine to have a desired effect, so must you be exposed to a sufficient quantity of a hazardous material to be harmed. Factors such as the length of time you are exposed and how often you are exposed influence the effects.

People involved in the arts are most likely to be exposed to toxic materials by skin contact, inhalation or ingestion. Skin burns and absorption of toxic materials through the

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skin can be avoided by wearing chemically impermeable gloves and other chemical protective equipment and by washing contaminated skin surfaces immediately. Work that may generate airborne contaminants must be adequately ventilated to maintain safe levels. If ventilation alone can not maintain safe levels, a respirator may have to be worn. Ingestion may occur when material comes in contact with the mouth. Ingestion is frequently the route of exposure to metals when working with painting pigments, ceramic glazes, or welding. You should never point the tip of your paintbrush with your lips or hold the dirty handle of your brush in your teeth! Exposure though ingestion can be avoided by frequently washing your hands, not eating or smoking in the studio, and keeping all objects out of your mouth.

The manner in which you store art materials, handle them, and clean up afterwards will significantly influence the risk of accident or exposure. This is particularly true in studios handling flammable and toxic materials. In general, use small quantities of chemicals. Low amount of chemicals could lessen your exposure to the acute and chronic effects they may produce. Follow these general principals of safety storage: (1) only store compatible materials together (identify incompatible materials on an MSDS); (2) store chemical containers in cabinets, never on the floor or on shelves above shoulder height (particularly flammable solvents, acids, or bases) where they may fall and break; and (3) make sure all containers are labeled and in good condition (keep materials in their original containers or containers made of the same material). Avoid putting chemicals in breakable containers, food containers, coffee containers, or containers with loose fitting lids. Make sure that all compressed gas cylinders are secured in an upright position and have the valve protection cap on when storing or transporting them.

Dispose of all hazardous wastes in accordance with Risk Management and Safety's policies and procedures. If you have questions, RM&S x4502 in regards to separating, labeling, and storing hazardous waste. Never dispose of hazardous wastes in the normal trash or down the drain. They will need to be sent to an EPA-permitted disposal or treatment site.

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Fire

The fire hazards associated with artist's materials are often overlooked, yet fire may be the greatest risk artists' face. Common art materials that may cause a fire include flammable or combustible solvents, oily rags, chemical oxidizers, and compressed welding gases.

Improper use of solvents causes most art-related fires. Artists must be aware of a solvent's flashpoint and volatility, the two primary properties that influence a solvent's ability to initiate a fire

The flashpoint, the single most important factor, is the temperature at which a solvent gives off enough vapor to form an ignitable mixture with air and can ignite in the presence of an ignition source such as a flame or electrical spark. The lower the flashpoint, particularly when it is at or below room temperature, the more hazardous the material.

A substance's volatility determines how much of it will evaporate and mix with air. In order for a solvent to catch fire, it must evaporate and its vapors must mix with air to form the right fuel/air ratio (typically 1-3 percent). The more volatile the solvent, the more readily it will evaporate and the more likely it will create an ignitable fuel/air mixture. Acetone is extremely volatile and if spilled, it will evaporate almost instantly. Mineral spirits, which has a much lower volatility than acetone, will evaporate much more slowly if spilled.

To control the risk of a fire, always choose a solvent with the highest possible flashpoint and the lowest possible volatility. Ventilate the area to keep the solvent concentration from reaching an ignitable air/fuel mixture. Remove ignition sources such as open flames and electrical equipment that may generate sparks. Vapors from flammable solvents are heavier than air. They can travel some distance to an ignition source and then flash back to the solvent source.

To prevent fires, store rags soiled with setting oils (tung oil, linseed oil) in tightly closing metal containers and have them picked up daily for professional laundering or disposal.

Flammable solvents should be stored in a storage cabinet designed for flammable materials. When using flammable solvents out in the studio, store them in safety cans.

If you use compressed gases, such as acetylene or propane, be familiar with all the regulations that apply to them. Secure them in an upright position and test the regulator fittings and connections for leaks before using them. Be sure to store compressed gases separately from compressed oxygen.

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Emergency Evacuation

Be familiar with the evacuation routes and procedures in case of an emergency. Pay attention to housekeeping issues to ensure that emergency evacuation routes are clear and that material on the premises will not cause someone to slip or trip and fall.

Keep all passageways to the emergency eyewash station and shower clear of any obstacles. Make sure that access to an eye wash or standing shower is not restricted. RM&S routinely checks the eyewash stations and standing showers to be certain that water flows through them. We allow them to run for several minutes once to clear out the supply lines. If they are not checked periodically, sediment will set in the facet and be flushed into you eyes in an emergency. A test also ensures sufficient flow. Generally, exposure to material would require a continuous flow of water to the injured party for 15 minutes.

Fire safety equipment should be easily accessible and must include a fire extinguisher. Fire extinguishers should only be used by trained individuals. Other equipment may include fire hoses, fire blankets, and automatic extinguishing systems. Fire extinguishers in your area are occasionally reviewed to see that they are fully charged and ready to use. Know how to activate the building's fire alarm and what the emergency procedures are in your area.

A first aid kit is maintained in close proximity to the classroom/studio. The kit is maintained in the ARTS 107 (backstage between ARTS 111 and ARTS 101) , and may be accessed as needed. Keys to backstage, are issued to all faculty, staff and student managers who are all authorized to access the first aid supplies. An additional first aid kit is located in the Wood Shop (Arts 344).

These kits are intended for First Aid ONLY! In the event of anything OTHER than minor incidents, accidents are to be reported IMMEDIATELY to the supervisor in charge of the area, who shall contact University Police at 911 or x4567, who are authorized to contact the proper emergency services. If the incident is serious or life-threatening, you should call 911 immediately. University Police should then be contacted as soon as practical. Render whatever first aid can be applied until emergency services arrive to relieve you. All incidents must also be reported to Risk Management & Safety at x4502.

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Physical Hazards

Physical hazards in the arts include ultraviolet and infrared radiation, noise, vibration, stress to the muscular skeletal system from repetitive motion or excessive lifting, improperly maintained equipment, and poor storage and process management. They also include injury arising from carelessness and inattention.

You must understand how to control your exposure to radiation sources by avoiding carbon-arc lighting when possible, covering skin surfaces, and wearing appropriate shaded eye protection. If you are welding, it is also important that you screen your work from others so no one will be inadvertently exposed. Radiation intensity decreases quickly with distance so you should increase your distance from radiation sources if possible and keep others away.

Noise is common in arts studios and is produced by such things as woodworking and metal working machinery; hand, electrical, and pneumatic tools; and exhaust fans. The noise level emitted from equipment or processes may be reduced by dampening vibration, isolating noise-producing equipment, or installing sound-absorbing materials. If engineering or preventative maintenance controls are not available to reduce your exposure to noise, hearing protection in the form of earplugs or earmuffs can be worn to reduce noise exposure in noisy environments. You should be aware of the different types of ear protection and the proper use and care of this protection.

Repetitive motion, particularly of the hands, wrists, and arms, can lead to painful inflammation of muscles, tendons, and nerves over time and cause the eventual deterioration of those tissues. The symptoms associated with repetitive-motion disorders can include pain, warmth, swelling, and difficulty moving the joint involved. The continuous, often extreme bending of wrist, elbow, and shoulder joints leads to these disorders. Hand polishing, sanding, drawing and painting in awkward postures, are examples of high-risk repetitive tasks. To prevent these injuries, select appropriate tools lay out your work so you can use more neutral postures (for example, a straight wrist) while performing tasks. You should take frequent rest breaks to stretch muscles and work on alternate tasks. This allows you to use and rest different muscles. You should use as light a grip as possible when holding tools. If you cannot relieve joint pain by taking time off or reducing stress on the joint, you should seek medical assistance. Repetitive motion disorders can be disabling if not treated early.

Back injuries may occur from lifting heavy objects such as sculptures and lithography stones. Use mechanical aids such as hoists whenever possible to move heavy objects. You should lift in pairs if the object weights more than 50 pounds. Proper lifting techniques include: keeping you head up, flexing your knees, keeping your back straight, holding the load close to your body, and lifting with your legs. You should never lift and twist at the same time.

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Fires and electrical shock may be caused by overloaded electrical circuits, extension cords, or power strips or tools that are not properly grounded. To avoid electric shock, use double insulated tools. Reduce the use of extension cords and power strips and use the appropriate hardwired ground fault circuit interrupter (GFCI) protected outlets whenever possible. When an extension cord must be used, purchase the type with a GFCI built into it. If an electrical circuit breaker trips, have the instructor obtain the assistance of your Instructional Support Technician and/or Facilities Services Representative. The circuit may have a short that could lead to a fire.

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PPE

Personal protective equipment that can be worn in art studios include: gloves, glasses, goggles, face shields, respirators, earplugs, earmuffs, safety shoes and hard hats. Miscellaneous garments such as aprons, coveralls, leggings, sleeves, and knee pads are also recommended.

You should carefully examine all personal protective equipment, particularly reusable equipment, before using it to ensure that there are no defects. Defective equipment should be returned, reported and replaced.

Tie back long hair. When working around furnaces, it is recommended that students wear long-sleeved closely woven cotton fabrics to protect against heat. Prohibit polyesters and other synthetic clothing which might melt from contact with molten metal or glass. Dangling jewelry and loose clothing when working with power tools is prohibited.

Gloves

In order to be effective, gloves must be selected based on the hazard associated with the task being performed. No glove is appropriate for all scenarios. Chemicals can degrade, penetrate, and in some instances permeate gloves without visual evidence. You should be informed about appropriate glove care. For example, you should rinse your chemical gloves before removing them and wash your hands afterwards. Most glove manufacturers produce and freely distribute charts that identify appropriate gloves to wear when working with different chemicals. You should consult your instructor and/or RM&S when selecting gloves.

Eye/Face Protection

It is important to protect your face and eyes from flying particles, chemical splashes, or infrared (IR) or ultraviolet (UV) radiation. The type of face or eye protection to be worn depends on the type of hazard present and severity of exposure. To protect yourself against flying particles, wear safety glasses with side shields or goggles (preferred). Add a face shield if the potential exposure is severe. Chemical splash goggles should always be worn to protect the eyes when pouring or mixing chemicals and at all other times when there is a chance of chemical splash. The vents on these goggles are located to prevent a splash from entering the goggle. To protect the face from corrosive material, add a face shield over goggles. To protect the eyes from IR or UV radiation while welding, brazing, soldering, glassblowing, or working in a foundry, wear shaded safety glasses, goggles, or a welding helmet.

Respirators

Respirators should only be worn when the task or work area cannot be adequately vented to reduce the exposure to a safe level. Respirator selection must take into consideration a number of factors. These include the type of contaminants present (for example particulates, gas, or vapor); the concentration of the contaminant; the duration of exposure; and the functional and physical characteristics of the respirator. Please

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contact Risk Management and Safety for assistance if you are considering selecting respiratory protection.

Hearing Protection

Noise can be generated from a whole range of sources. In the VPA the most likely noise generating sources are portable or fixed machinery such as; drills, saws, etc. Regardless of the source, the effects of noise are predictable and the consequences preventable.

To effectively protect yourself from the harmful effects of noises that might be present in the VPA, OSHA requires a workplace evaluation and noise level determination. The safe level of noise is 85 decibel (8 hour Time Weighted Average) or below. That can be equated to approximately the level in which you would produce as you raise your voice to talk to someone close by. If you are exposed to these levels, you should use hearing protection in the form of plugs or muffs. Contact RM&S if you suspect you need assistance in evaluating your noise exposure.

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Rigging

The following rules should be followed when using a lift;

When stage rigging is planned or presently occurring access should be restricted to anyone other than cast and crew.

Make sure work schedules are arranged so that rigging and “flying” scenery is undertaken when no other activities are taking place on stage.

Permit only authorized and trained personnel to rig scenery and operate rigging systems. Make sure that rigging trainees or students have a thorough understanding of stagecraft, have completed prerequisite courses and are closely supervised.

Hold a safety and strategy meeting prior to beginning each work period for the entire crew. If students are involved, review safety procedures and “warning call” terminology.

Clearly define each person’s roll in the rigging procedure. Everyone should precisely what his or her responsibilities are before the action begins.

Firmly establish lines of command. In rigging large pieces of scenery, many hands will be needed, but only one person should be making the decisions for each step of the way.

Order and insist on periods of complete silence on stage, especially during hazardous operations. Crew members will be spread out in a variety of locations in the staging area. Command and response is absolutely critical for safety and success. Never allow noise levels to reach those that could cover up warning calls.

Much rigging work takes place above the floor of the stage. All hands going “overhead” should empty pockets of items that could fall on people below – glasses, jewelry, keys and hair ornaments. Secure all tools to workers with a safety line.

Wear safety belts when working on the “grid”.

Never drop anything from the grid to the floor. Ropes and electrical lines must be pulled up, coiled and carried or lowered to stage level.

Check rigging and have it approved when it is finished. Since faulty rigging can cause serious accidents, only a qualified inspector who you know to be experienced should make the final inspection. In some situations, even paying a private inspectors fee.

Make sure stagehands know they are to report and defective or worn equipment immediately and seek replacements. Never use equipment whose load bearing capacity is not known – especially ropes and wires, turnbuckles, shackles, nuts and bolts.

Finally, once rigging is in place and being used, report and discuss any problems during rehearsal notes.

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Lifts

The following rules should be followed when using a lift;

- Only properly trained individuals may operate scissors lifts.
- All lifts must be inspected before use.
- Know the load capacity of the lift and never exceed it.
- To avoid tip over. Lifts may not be traveled unless the basket is in the lowered position.
- Floors must be inspected for holes or objects that could upset the lift.
- Never tie off to the guardrail of a scissors lift. You could pull it over if you fall out. Tie off to the
- Never lean out to the side of a scissors lift. Reset its position if necessary.
- To avoid falling out of the platform. All guardrails must be in place, including entrance mid-rails and chains.
- You must remain on the floor of the platform unless tied off to the structure above.
- Never stand on the toe board or guardrails of a scissors lift.
- Always look up when raising a scissors lift to avoid overhead hazards.
- Lifts must always be operated parallel to edges and holes even when guarded.
- Lifts must always be operated perpendicular to stairways.
- Be sure that electrical cords tied to lifts have enough slack during travel.
- Avoid running over cords during travel.

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Ladders

The following rules should be followed when using a ladder:

- Before using a ladder, inspect it for faults, such as broken rungs or rails. If it is an extension ladder, inspect the pulleys, ropes and locks for excessive wear. Also, check the footings and pads to make sure they still provide a non-skid surface. If any defect is found, the ladder should be tagged unsafe and taken out of service. If it cannot be fixed, make sure it is disposed of properly.
- When setting up a ladder, make sure the ground it is set upon is level and stable. Do not set the ladder up on an unstable surface or you may find yourself falling over. Do not use bricks, wood or other material to raise the height of the ladder. If it is not tall enough, you are using the wrong ladder.
- The ladder should reach a minimum of three feet above the "point of support" and should be secured at this point.
- When using extension ladders, abide by the 4:1 rule. This means if you are using a 12 foot ladder, the base should be three feet from the structure. Some ladders provide a picture guide on the ladder itself to assist you in this. When using a stepladder, make sure the folding cross braces are locked in the proper position before you step onto it.
- Always face the ladder when ascending or descending, and have both hands free to grasp it securely. If you need tools, they should be carried in a tool belt or pulled up with a rope once you have reached your destination.
- Remember the "3-Point Rule": At least two hands and one foot, or two feet and one hand, should be in contact with the ladder at all times.
- Keep your body between the side rails of the ladder. This reduces the chance of tipping it over and/or falling off.
- Do not climb higher than the third rung from the top on straight or extension ladders or the second tread from the top on stepladders.

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Woodshop

The following should be considered as guidelines for working in the Wood Shop area. They have been written and are enforced for your safety, and as such should be followed at all times. You are responsible to know and understand all of the following:

All persons working in the shops shall be properly attired. This includes long pants and close-toe shoes. Hard-sole shoes should be worn if possible since gym shoes do not afford sufficient sole and toe protection. At no time will anyone wearing a dress, shorts or sandals be allowed to work in the shop area as none of these garments give sufficient protection to the wearer. Also, long hair is to be tied back to avoid any chance of getting caught in moving machinery.

The Wood Shop is an eye protection area and safety glasses are required whenever entering this space. In general, when operating any power tool, safety glasses are to be worn. Also when participating in any amount of abrasive sanding or spray painting, respirators are also to be used in addition to safety glasses. Ear protection is available to all students and staff in the shop areas at all times. It is up to the student or staff members to determine when this protection is necessary.

Every attempt should be made to keep your work area clean and organized. This means periodically sweeping up excessive waste and returning unnecessary tools to their proper places.

There is to be NO SMOKING IN THE SHOP AREAS. No soft drinks or food are permitted in the shop areas.

No person shall work in the shops while under the influence of drugs or alcohol. Prescribed drugs which could cause drowsiness, lightheadedness, or disorientation should also not be used. Any student using such prescribed medications should notify both the Faculty and Staff in charge. Any person removed from the shops for the above reason shall not be allowed to return unless authorized by the Faculty.

Anytime that you have a problem with any tool or machine, bring it to the attention of the Staff so they may assist you. Never attempt to repair or adjust any machines. If a machine or tool is accidentally damaged, bring it to the attention of the Staff. Please do not try to hide or cover up any damages.

At no time shall any student operate or attempt to operate any of the following pieces of equipment without permission of the Staff.

- Table Saw
- Radial Arm Saw
- Circular Saw

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- Band Saw
- Saber Saw
- Drill Press
- Any pneumatic power tool

Before operating any power tools, make sure all allen wrenches, chuck keys or other foreign materials are clear of the machine's work area.

Dangling necklaces or earrings, large rings, long loose scarves or loose sleeves should not be worn in the shop as they may become entangled in moving machinery.

Always make sure that all power tools are turned off and the electrical power disconnected before leaving the machine. Never leave an unattended machine running, even for "one second".

Always unplug or disconnect from power all power tools before changing blades, bits or attachments.

IF YOU DON'T KNOW-ASK! There is no such thing as a dumb question, only dumb mistakes and injuries.

Safety rules for each of the major power tools in the wood shop are posted near each tool.

NO PERSONS WILL BE ALLOWED TO OPERATE ANY POWER TOOL UNTIL TRAINED AND APPROVED BY THE INSTRUCTOR. All required safety rules must be followed at all times.

Some guidelines for using tools include:

Inspect tools before use for any defects such as frayed wires, or damaged hand tools. Remove defective tools from service and have it repaired or replaced.

Only use power tools that are properly grounded with a 3-pronged plug or that are double insulated. A power tool with a missing grounding prong shall be considered damaged and be removed from use until repaired.

Never carry a power tool by its cord. Avoid wrapping cords too tightly around tools for storage to prevent damage to strain relief grommets.

Unplug power tools before loading the, changing blades or bits, making adjustments, or cleaning them. Follow all manufacturers' instructions for handling and adjusting.

Defective, damaged or unsafe equipment must be removed immediately from service if damage occurs or is detected.

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Dull tools are unsafe and can damage the operator or work. Maintain your tools and always use sharp cutting blades.

NEVER ALTER OR REMOVE ANY MACHINE OR BLADE GUARD OR DISABLE ANY SAFETY FEATURE.

Housekeeping

Poor housekeeping can create an unsafe studio and cause exposure to toxic materials. Instruct students how to clean up spilled materials and spread absorbent to dry wet spots to prevent slipping hazards. It is important that you promptly clean up your work area. At the end of each session, wet mop or vacuum with a HEPA-filtered vacuum if your work could generate highly toxic dusts such as lead, other heavy metals, or silica (fine clay). Dry sweeping re-suspends settled dust and does not remove it. Keep aisles free of obstructions such as chairs, boxes, and waste containers. Do not clutter the studio with combustible materials such as paper and cardboard.

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- Hazardous Communication (Material Safety Data Sheets)
- Fire
- Emergency Evacuation
- Physical Hazards (UV exposure, electric shock, material handling, repetitive motion)
- PPE (gloves, eye/face protection, hearing protection, respirators, etc.)
- Rigging
- Lifts
- Ladders
- Woodshop

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Housekeeping

I have read this Visual Performing Arts Safety Training guide and the VPA Safety manual. My instructor has trained me in recognizing hazards in the studio or classroom and explained ways to protect myself from exposure to them.

Name (please print) _____ Date _____
Instructor or Supervisor _____ Date _____